

U.S. ENVIRONMENTAL PROTECTION AGENCY

Region 1

EPCRA and CAA 112(r) Inspection Report

Date: July 1, 2016

From: Leonard Wallace IV, Enforcement Officer

Through: Mary Jane O'Donnell, Manager, RCRA, EPCRA, and Federal Programs Unit

To: File

Subject: Chemical Accident Investigation and Inspection, under Clean Air Act (CAA) Section 112(r) and Emergency Planning and Community Right-To-Know Act (EPCRA) Sections 302-312, of Stavis Seafoods, Boston, MA

I. GENERAL INFORMATION

Facility Name: Stavis Seafoods, Incorporated (Inc.)

DUNS Number: 831817353

Address: 7 Channel Street, Boston, MA 02210

Inspector Names:

Leonard B. Wallace IV, U.S. Environmental Protection Agency (EPA), Region 1

David F. Oberhauser, US EPA/SEE/NOWCC

James R. Valentine, US EPA/SEE/NOWCC

Andrew Loll, ERG

Larry Aleksandrich, Ammonia Refrigeration Consultant

Inspection Date: April 6, 2016

Type of Inspection: Follow-up CAA 112(r)/EPCRA inspection

Purpose of Inspection: This inspection was conducted as a follow-up to the initial EPA 112(r)/EPCRA inspection conducted on March 24, 2016. The March 24 inspection was conducted in response to a catastrophic release of anhydrous ammonia on March 23, 2016 resulting in a fatality at the facility. During the March inspection, the EPA inspection team observed several CAA Section 112(r) areas of concern related to the ammonia refrigeration system design and operation at the Stavis facility. In addition, the facility was unable to determine the ammonia charge quantity in their system. The purpose of this inspection was to reassess the current status of the ammonia refrigeration system with an industry-recognized ammonia refrigeration expert, Larry Aleksandrich, to determine corrective actions required to make the system safe for operation, and to determine the ammonia charge quantity. Representatives from the EPA, the Occupational Health & Safety Agency (OSHA), and the Boston Fire Department (BFD) participated in the joint agency inspection on April 6. This

report identifies observations and findings made by the EPA inspection team with respect to compliance with the CAA Section 112(r) and EPCRA requirements.

Current Property Owner: Economic Development and Industrial Corporation of Boston

Current Business Owner and Operator: Stavis Seafoods, Inc. and Stavis Seafoods
Limited Partnership

Primary NAICS codes: 424460, Fish and Seafood Merchant Wholesalers

Number of full-time employees: Approximately 120 FTEs

Estimated Annual Sales: \$203 million (Hoovers, March 24, 2016 report)

Relationship to other firms, parent corporation, subsidiaries, and location of off-site facilities: Stavis Seafoods, Incorporated is a privately held company located in Boston, Massachusetts. The Stavis administrative offices are located at 212 Northern Avenue, Suite 305, Boston, MA, 02210.

Parent Corporation: Stavis Seafoods, Inc.

II. GENERAL FACILITY DESCRIPTION

The Stavis facility is located in Boston, MA and processes and distributes fresh and frozen seafood. The company has approximately 120 full time employees and is a nonunion shop. The facility uses anhydrous ammonia in its refrigeration system for temperature control in the cooler and freezer rooms. The facility contains a refrigeration system in the Ammonia Machinery Room, two cooler rooms (Cooler Room A and Cooler Room B), a cutting/processing room in one corner of Cooler Room A, a Freezer Room, loading docks, forklift battery charging room, maintenance shop, chemical storage areas, and administrative offices. The facility contains cyclone fencing around three sides including along Massport Haul Road, but is not enclosed or gated along Channel Street.

According to an ammonia inventory list developed in 2009 by American Refrigeration Company, Incorporated (ARC), the amount of ammonia stored on site is 5,460 pounds. After the March 23 release Tanner Industries, Incorporated pumped out the system down to 40 psig and provided a Delivery Receipt showing 3,231 pounds of anhydrous ammonia were removed from the system on April 1, 2016. The EPA has requested additional verification documentation of the total system ammonia inventory.

III. IN-BRIEF/OPENING CONFERENCE

The EPA inspection team, including Leonard Wallace, IV, David Oberhauser, James Valentine, Andrew Loll, Eastern Research Group, Inc. (ERG) contract inspector, and Larry Aleksandrich, Aleksandrich Compliance and Engineering Services, LLC contract inspector, entered the facility at approximately 8:45 am. The inspection team presented identification to Mary Fleming, Stavis Owner and CFO, and other Stavis representatives during the opening conference in the conference room in the administrative office area. Inspector Wallace conducted the opening meeting and explained the reason and scope of the inspection. OSHA and BFD representatives also explained the scope of their respective inspections.

Inspector Wallace presented the EPCRA Notice of Inspection to Ms. Fleming, who signed as the Recipient of the Notice. Ms. Fleming did not attempt to deny facility entry to the inspectors, nor did she invoke any claims of Confidential Business Information (CBI) for purposes of the inspection.

Facility Representatives:

Name	Title/Company	Phone Number	E-mail
Arthur Antczak	Operations Manager/Stavis Seafoods	617-592-5135	aantczak@stavis.com
Salvatore Armata	Refrigeration Technician/American Refrigeration Company	781-953-8962	sarmata@americanrefrigeration.net
Roumauld Boynes	Sanitation Supervisor/Stavis Seafoods		
Joseph Dimeco	American Refrigeration Company	781-534-8893	jdimecojr@americanrefrigeration.net
Mary Fleming	CFO/Stavis Seafoods	617-482-6349	mfleming@stavis.com
Gary Hardin	Regulatory Affairs Manager/ Stavis Seafoods	617-590-7668	ghardin@stavis.com
James McPartlin	Assistant Operations Manager/Stavis Seafoods	617-482-6349	jmcpartlin@stavis.com
Jeremy A. Okwuosa	Quality Assurance Director/Stavis Seafoods	857-288-9721	jokwuosa@stavis.com
Carlos Rita	Service Manager/American Refrigeration Company	978-474-4000	cita@americanrefrigeration.net
Michael Sirois	President/ American Refrigeration Company	978-474-4000	msirois@americanrefrigeration.net
Scott Sweet	Principal Advisor/HCG Associates	508-958-0700	ssweet.hcg@comcast.net

Inspector Wallace shared the following guidance documents with facility representatives:

1. EPCRA Fact Sheet (EPA 550-F-12-002, September 2012)
2. EPCRA 302/303 - Substances and Facilities Covered Forms and Notification letter
3. 2012 Tier II Submit Fact Sheet and MA Tier II Information
4. List of Lists (EPA 550-B-15-001, March 215)
5. Small Business Resource Information Sheet (EPA 300-F-11-006, June 2011)
6. *National Response Center Oil and Chemical Spill Reporting* flyer
7. *Chemicals in Your Community* brochure (EPA 550-K-99-001, December 1999)

During the inspection, Inspector Wallace requested and received copies of the following documentation:

1. Sign in sheet
2. Tanner ammonia pump-out delivery receipt dated 04/01/2016, No. N004070

3. American Refrigeration Company (ARC) 2009 ammonia charge/inventory documentation dated 09/07/2009 original & revised
4. M&M control system ammonia detection summary report from 3/23/2016 to 3/25/2016
5. Hansen Gas Sensors and Monitors, Bulletin A100, FEB 2006
6. ARC, Invoice Number W24082 Feb 28/13 Replaced relief valves
7. MSDS Ethylene Glycol, Reviewed 08/22/2011, Johnson Matthew Company

Inspector Wallace stated that after they did a preliminary review of the requested documents, inspectors expected to do a walk-through inspection of the refrigeration process and all facility areas where the inspection team would be taking photographs of items and areas of interest. A copy of all photographs taken would be sent to the facility representative after the inspection.

IV. PHYSICAL INSPECTION

General Inspection

The EPA inspection team conducted a walk around of the following areas at the Stavis facility:

1. Refrigeration system in the Ammonia Machinery Room and maintenance room
2. Roof
3. Cooler/freezer rooms and loading dock
4. Building perimeter

Mr. Oberhauser and Mr. Wallace took a total of 353 digital photographs (photos) of selected equipment and locations during the inspection to provide reference documentation of conditions observed during the inspection. A photo documentation log of these photos is attached to this report, and the photos will be referenced throughout the document. The inspectors did not collect any samples during the inspection.

Maintenance/Storage and Ammonia Refrigeration Ammonia Machinery Room

The inspectors conducted a walk around of the Maintenance and Ammonia Machinery Room area located on the southwest end of the facility and separated from the rest of the facility by cinderblock walls. The maintenance room, which also includes the chemical storage area, is located on the ground floor of the building and the Ammonia Machinery Room is located on the second floor of the building. The Maintenance Room contains floor drains and a barricaded access way that leads into an area beneath the ground floor that facility representatives claimed was a tidal sump. Presumably this sump drains to the Boston Harbor. Mr. Roumauld Boyens, Stavis Seafoods, stated that the floor drains inside and outside (see Building Perimeter section) the building also drain to Boston Harbor.

The Ammonia Machinery Room is accessed via a permanent wooden stairway. The only ground-floor entrance into the building, and the primary entrance to the Ammonia Machinery Room area, is through a set of double doors on the south end located in an alleyway between the administrative offices and the property line. The second floor of the building (Ammonia Machinery Room) also contains two sets of double doors on the south end of the building above the primary entrance and on the west side approximately 17 feet above ground level.

The south end doors in the Ammonia Machinery Room contain two sets of chains across the opening, but otherwise do not lead to stairs or any other means to safely exit from the room. The west end doors do not lead to stairs or any other means to safely exit from the room and do not have chains or any other barricades to prohibit someone from moving through the opening.

The Ammonia Machinery Room is split into two sections with the original Ammonia Machinery Room on the south end and an expansion room on the north end. The expansion room is elevated about four feet above the elevation of the original room and accessed by a short permanent ladder. The original Ammonia Machinery Room, built in 1984, contains four reciprocating compressors with oil separators, pilot receiver, control pressure receiver, transfer (dump) tank, low and high temperature accumulators, shell and tube heat exchangers, M&M process control panel, electrical switchgear, and associated refrigeration piping. The expansion room was installed in 2005 and includes one reciprocating compressor with an oil separator, a large accumulator vessel, an electrical switchgear room, and associated refrigeration piping.

Compared with the condition of the rooms observed during the March 24 inspection, the facility had removed a significant amount of material and clutter from both floors of the building including underneath the stairway. In addition, the facility had contracted with Clean Harbors to clean up all of the residual oil on the floor, equipment, and piping in the Ammonia Machinery Room. The inspectors observed some oil still on the overhead piping.

The power to the Ammonia Machinery Room areas was shut off prior to this inspection.

Based on the walk around the Maintenance Room and Ammonia Machinery Room areas, the inspection team observed the following areas of concern:

- The floor drains and tidal sump in the Maintenance Room appear to drain directly to the Boston Harbor with no engineering or administrative controls to prevent oils or other hazardous substances from reaching navigable waters (see Photographs 1 through 5).
- The glycol system header, located in the Maintenance Room area, is part of the ammonia system and the piping and equipment were unlabeled. The glycol piping regulates the floor temperature in the refrigerated rooms and also travels through the Ammonia Machinery Room on the second floor (see Photographs 21 through 24). None of the facility representatives knew what type of glycol (i.e., ethylene or propylene) was used or the amount of glycol solution that was in the system.
- A red visual alarm was located above the primary entrance to the Ammonia Machinery Room with a small label stating “Refrigeration Emergency” (see Photograph 1). The label was barely legible from the ground and did not adequately identify the purpose of the alarm or what “Refrigeration Emergency” means. For example, the alarm may indicate the presence of ammonia or may indicate some other process upset condition with the refrigeration system not related to an ammonia release. There was no audio alarm near the door. Additionally, there were no audio or visual alarms near the second-floor doors should someone attempt to enter the room

from the outside (e.g., ladder or fire truck). Also, there were no audio/visual alarms inside the Ammonia Machinery Room.

- The second-floor doors open directly to the exterior of the building without a stairway, ladder, or other means to safely exit the building. The doors on the south side contain two sets of chains across the doorway, but would not effectively prevent an individual from exiting the doorway and falling (see Photographs 1 and 32). The doors are not locked and do not contain warning signs. The doors on the first floor (maintenance room) and second floor were not tight fitting (see Photograph 165). The doors on the second floor in the Ammonia Machinery Room opened inward.
- The primary entrance to the Ammonia Machinery Room on the ground floor contains a locked box with a remote emergency stop button for the Ammonia Machinery Room equipment and a ventilation manual override switch (see Photograph 6). According to facility representatives, Brian Coran (the deceased employee) was the only staff person with a key to the box.
- The inspectors observed several instances of open electrical junction boxes, loose wiring, and light sockets without bulbs in the Maintenance Room and in the Ammonia Machinery Room (see Photographs 24 and 187 for examples).
- The Maintenance Room contains an eyewash station near the ground-floor entrance to the building, at the base of the stairway. The eyewash station is not connected to a water supply and no safety shower is present (see Photograph 25). In addition, there are no safety showers or eyewash stations in the Ammonia Machinery Room on the second floor or outside the primary entrance.
- The roof access inside the Ammonia Machinery Room is an aluminum extension ladder located at the second-floor landing of the stairway. The ladder is secured to the roof access panel. The base of the ladder only contains about one foot of space before the first step of the stairway to the first floor and presents a fall hazard (see Photographs 109, 110, and 111).
- Most of the piping and equipment in the Ammonia Machinery Room was inadequately labeled or missing labeling indicating contents, physical state, and direction of flow (see Photographs 115, 123, 124, 125, 132, and 135 for examples).
- The inspectors observed several sections of piping that penetrated the Ammonia Machinery Room wall and were not tight sealing and other unsealed gaps in the walls and floor (see Photographs 115, 116, 117, 120, and 139).
- The Ammonia Machinery Room air intake is a square mechanically louvered opening on the south side of the room near the pressure control receiver and the transfer tank. The motor for the louvers was hanging loosely on the louver rod and would not

function to open the louvers if activated (see Photographs 121, 145, and 196). Additionally, the inspectors observed a piece of plywood leaning against open contacts for the louver motor control, presenting an electrical hazard (see Photograph 196). The power to the Ammonia Machinery Room area had been shut off and the louvers were in the closed positions and did not go to the open position when power to the room was shut down (see Photograph 145).

- The inspectors did not observe a “U” or “UM” stamp signifying compliance with the rules of Section VIII of the ASME Boiler and Pressure Vessel Code for any of the original compressor oil separator pots, which are pressurized vessels greater than six inches in diameter. Additionally, none of these pressure vessels are protected by a pressure-relief device to safely relieve pressure due to fire or abnormal conditions (see Photographs 127, 150, and 151).
- The inspectors observed damaged, stained, and missing insulation in multiple areas on ammonia piping and vessels in the room (see Photographs 123, 131, 140, and 153 for examples).
- None of the isolation valves (i.e., king valves) used for isolating the ammonia in the receivers were clearly labeled and identified as isolation valves. In addition, one isolation valve (manual and automated) Control Pressure Receiver was located approximately eight to ten feet above ground level with no permanent platform or ladder or chain for operation to access the valve in the case of an emergency (see Photograph 124).
- The nameplates for the control pressure receiver, pilot receiver, and low temperature accumulator did not contain a National Board registration number (see Photographs 80, 81, 82, and 119 from the 3/24/16 EPA Inspection Report). Additionally, the transfer tank (Dump Tank) was missing a nameplate altogether (see Photograph 140). As of the date of this inspection report, the facility has not produced U1 or U1A forms for any of the pressure vessels showing that the tanks were fabricated and tested for the operating pressures in the refrigeration system.
- The Pilot Receiver drain valve was not a self-closing valve (see Photograph 157). In addition, multiple drain lines extended from the tanks into walkways and were not protected from physical damage (see Photographs 149 and 157).
- The electrical switchgear room inside of the expansion Ammonia Machinery Room contained electrical conduit that was dripping water from a fitting, indicating that water was present inside the conduit and presenting an electrical hazard (see Photograph 180).
- The inspectors observed the pressure relief valve discharge lines in the Ammonia Machinery Room to be manifolded together into a single relief vent header to the

roof, including the relief line from the 2005 expansion equipment. The inspection team requested relief vent calculations to verify that the vent header is appropriately sized and, as of the date of this report submission, have not received the calculations. The vent line may not be adequately sized to safely vent the equipment in the Ammonia Machinery Room which presents a potential over pressure hazard in the ammonia equipment and piping.

- The inspectors observed a Hansen ammonia detector in the Ammonia Machinery Room near the ceiling. According the ARC representatives and documentation, the detectors have not been calibrated since January 2015. The Hansen Bulletin A100 (February 2008) indicates that bump tests should be completed at least once every six months and calibration of the sensors should be completed annually at a minimum.
- The inspection team did not observe a legible, permanent sign in the Ammonia Machinery Room displaying the following information:
 - a) Name and address of the installer
 - b) The refrigerant number and the amount of refrigerant in the system
 - c) The field test pressure(s) applied

Roof

The inspection team walked around the roof of the building above the Ammonia Machinery Room and Cooler Room B which contains the evaporative condenser, Ammonia Machinery Room exhaust fans, ammonia refrigeration piping, and the relief vent discharge lines. The Ammonia Machinery Room equipment vents to a single vent header that discharges near the evaporative condenser. The inspectors also observed two smaller relief headers for each of the two ice makers in Cooler Room B. Because the Ammonia Machinery Room roof access ladder was deemed to not be safe for use, the BFD provided a ladder truck for access to the roof from the exterior of the building.

Based on the walk around the roof, the inspection team observed the following areas of concern:

- The labeling on the ammonia and natural gas piping and valves was worn or missing in several locations (see Photographs 40, 42, 77, 81, and 91 for examples).
- The roof did not contain guardrails or any other method of fall protection to protect workers within six feet of the roof edge (see Photographs 40, 62, 67, 73, 74, 91, and 97 for examples).
- The inspectors observed several instances of rusted valves and piping around uninsulated valve manifolds (see Photographs 41, 46, 49, 50, 56, 86, and 90 for examples).

- The Ammonia Machinery Room pressure relief vent line is located on the lower roof level (i.e., on the same level as the Ammonia Machinery Room exhaust fans), is less than 7.25 feet above the Cooler Room B roof level (see Photographs 61, 74, and 78). Additionally, the Emergency Exhaust Fan was less than 20 feet from the property line.
- The inspectors observed damaged or missing insulation on piping (see Photograph 76).

Cooler/Freezer Rooms and Loading Dock

The inspection team walked around the cooler rooms, freezer room, and loading dock areas. Cooler Room A is located on the south end of the building and is accessed through a main door from the administrative offices and a garage door from the loading dock. The room also contains the Fish Cutting Room for processing of seafood. Cooler Room A contains pallet racks along the walls and the Cooler Room and Fish Cutting Room contain ceiling-mounted evaporators. The only ammonia detector in the room is located in the center of the room near the ceiling.

The loading dock area runs the length of the building on the east side and contains nine truck loading bays. The area contains evaporators for cooling and natural gas-fired heaters for heating. The space also includes an administrative office on the south side and charging stations for electric powered industrial equipment.

Cooler Room B is located on the north end of the building and is accessed from the loading docks on the east end and through the Jack Room (battery charging room) on the west end. A balcony area is located on the west end of the room and is used as a Transportation Security Administration (TSA) segregation and screening area. Cooler Room B contains pallet racks and two ice making machines along the north wall. The room contains ceiling-mounted evaporators and one ammonia detector near the ceiling in the center of the room along the south wall.

The Freezer Room is located between Cooler Room A and Cooler Room B and is accessed through a single door or two sliding doors from the loading dock. The room contains pallet racks, ceiling-mounted evaporators, and one ammonia detector mounted on the wall near the ceiling.

During the inspection, the facility had rented and installed two skid-mounted R-22 refrigeration systems for keeping product in the Freezer Room cold. The units were located outside the loading dock area and the facility had run hoses pumping cold ethylene glycol along the floor from the exterior of the building into the Freezer Room.

Based on the walk around of the cooler rooms, freezer room, and loading dock, the inspection team observed the following areas of concern:

- The Fish Cutting Room is in an enclosed space within Cooler Room A but does not contain an ammonia detector (see Photographs 200 and 214). Because the room is enclosed, the ammonia detector in Cooler Room A near the ceiling in the center of

the room would not provide adequate warning of an ammonia release and presents a hazard to employees working in the cutting room.

- The copper water piping around the ammonia feed line to the evaporator in the Fish Cutting Room was oxidized with a bluish-green patina indicating that ammonia had been leaking from the refrigeration valves or piping at some point in the past (see Photographs 209, 210, 214, and 215).
- The inspectors observed several pallet racks installed near the ceiling and directly underneath ammonia piping and evaporator units in Cooler Room A (see Photograph 201). In addition, the inspectors observed a damaged drainage pan under one of the Cooler Room A evaporators, indicating that a forklift or other equipment had run into the pan (see Photographs 221, 222, and 225). Based on the position of the pallet racks and damage to the evaporator, the facility has not adequately protected the ammonia system from damage.
- The temporary refrigeration piping and electrical cords running across the floor present a trip hazard for employees working in the area (see Photographs 258 and 279).
- The inspectors observed a total of 13 electric forklifts in the loading dock and battery charging areas (see Photographs 258 and 311 for examples). Based on an inventory of battery weights listed on each unit, the EPA estimated the aggregated battery weight of 30,960 lbs. This equates to 6,192 lbs of sulfuric acid assuming concentration of 20 weight percent and 17,028 lbs of lead assuming a concentration of 55 weight percent. Sulfuric acid is an EPCRA extremely hazardous substance (EHS) with a threshold planning quantity of 1,000 lbs. Lead is a hazardous substance with a threshold planning quantity of 10,000 lbs. The facility did not report sulfuric acid or lead on their EPCRA Section 312 Tier II reports for Reporting Years 2013, 2014, and 2015.
- The loading dock area contains multiple evaporator units and ammonia piping. The room also contains two natural gas-fired heaters at either end of the room (see Photographs 259 and 266). According to facility representatives, neither heater is interlocked with the ammonia detection system. The heaters present an ignition source in the event of an ammonia release.
- The inspectors observed a section of ammonia piping wrapped in insulation (see Photographs 259 and 260). This type of insulation may retain moisture and liquid between the insulation and piping, increasing the likelihood of corrosion.
- The inspectors observed a liquid trap in one of the ammonia lines directly in front and just above one of the loading bay doors (see Photograph 264). Since this area is a

pathway for forklifts loading trucks, the ammonia piping is susceptible to damage from the forklifts or other equipment.

- One of the support legs on an icemaker in Cooler Room B was not bolted to the floor (see Photograph 297).
- The exit doorway to the exterior of the building in the battery charging room was blocked by two electric forklifts (see Photograph 311).
- None of the rooms containing ammonia refrigeration piping and equipment contained audio/visual alarms outside of the rooms to warn personnel in the event of an ammonia release.

Building Perimeter

The inspection team walked around the exterior perimeter of the building. The east end of the building includes the loading bays and parking area for vehicles. During the inspection, the facility had stationed two portable refrigeration units next to the building. Additionally, the inspectors observed approximately six empty and partially filled plastic chemical totes containing ethylene glycol for the portable refrigeration units. The west end of the building includes the alley way access to the administrative offices and the Ammonia Machinery Room. The inspection team observed the following areas of concern:

- The facility contained one windsock on the southwest corner of the building above the administrative offices (see Photograph 31). That part of the building contains a lower roofline than many of the other parts of the building such as the Ammonia Machinery Room and warehouse areas. There were no windsocks located near the Ammonia Machinery Room entrance or near the loading dock area where personnel may enter the area. Lack of windsocks presents a hazard to Stavis employees, truck drivers, and emergency personnel trying to determine the direction of the release plume in the event of a chemical release at the facility.
- The inspectors observed labels on the chemical totes near the portable refrigeration units to be Ashland Chemical Zerex G-48 RTU which is 49 percent ethylene glycol according to publicly available Safety Data Sheets (SDS) ([http://s7d9.scene7.com/is/content/GenuinePartsCompany/2447087pdf?\\$PDF\\$](http://s7d9.scene7.com/is/content/GenuinePartsCompany/2447087pdf?PDF)) (see Photographs 336 through 339). The inspectors requested a copy of the SDS for Zerex G-48-RTU and the contractor responsible for the system was unable to produce the SDS on-site. In addition, the inspectors observed one chemical tote inside the building on the loading dock that did not contain any labels or hazard identification (see Photograph 276). The Stavis representatives stated the inside tote contained glycol for the portable refrigeration systems.

Based on inspector observations, the facility had seven chemical totes on-site with each tote having at least a 275-gallon capacity (some totes outside were slightly taller than others). Using the SDS density of 1.0729g/cm³ and assuming the volume of all seven totes was either in the totes or the portable refrigeration systems, the EPA

estimates the facility was storing at least 17,200 lbs of ethylene glycol mixture onsite. Stavis will need to report the ethylene glycol mixture needs to report their SDS under EPCRA 311 within 90 days and will need to be added to their EPCRA 312 Tier II report for 2016. They may also need to report it under EPCRA 313 since they have likely more than 10,000 lbs of ethylene glycol in 2016.

V. OUT-BRIEF/CLOSING CONFERENCE

Inspector Wallace concluded the inspection with an out-brief to facility representatives, discussing the preliminary areas of concern and corrective actions identified during the inspection related to failure to maintain a safe work place and lack of adherence to industry standards for the ammonia refrigeration system. Inspector Wallace emphasized that the findings were preliminary and additional concerns and requested corrective actions would be communicated to the facility after the inspection.

The following corrective action items were identified during the out-brief:

1. Conduct non-destructive testing of piping and vessels
2. Re-rate pressure vessels in ammonia refrigeration system, including the four vessels listed below, or otherwise provide design and testing documentation that the vessels are fit for service:
 - a. Pressure Control Receiver – RVS-83017
 - b. Pilot Receiver- RVS-83016
 - c. Transfer (Dump) Tank – RVS-83005
 - d. Low Temperature Accumulator – No RVS number
3. Verify and certify that all small bore (2" diameter and less) anhydrous ammonia piping is Schedule 80.
4. Provide two means of safe egress off of the roof.
5. Provide two means of egress from Ammonia Machinery Room (second floor) and provide barriers or means of fall protection for the two sets of double doors located on the second floor in the Ammonia Machinery Room.
6. Install/repair ammonia detection system and install audio/visual ammonia detection alarms outside of each room containing ammonia piping and equipment.
7. Repair or re-install fire, smoke, and carbon monoxide detection system in Ammonia Machinery Room.
8. Install relief valves on compressor oil separator pots (OS-1 through OS-5) that are missing relief valves.
9. Install safety interlocks to shut down the gas-fired heaters on the loading dock when the presence of ammonia is detected.
10. Install safety interlocks to shut down ancillary electrical equipment (e.g., air compressors, portable lights, etc.) in Ammonia Machinery Room during emergency shutdowns or when remote emergency stop is triggered.
11. Remove remaining oil residue from accident from overhead piping in Ammonia Machinery Room.
12. Paint, insulate, and label all process piping, vessels, equipment, and valves according to industry standards and code.

13. Protect and secure storm drains in and around Ammonia Machinery Room from inadvertent releases of process chemicals to the storm drain system and navigable waters.

Inspector Wallace requested several documents during the out-brief:

1. List of ammonia refrigeration system equipment from 2009 to present
2. Ammonia charge calculations/inventory
3. Ammonia pump-out receipt from March 24, 2016
4. 2009 ARC equipment files
5. If not included in Request #4 above, provide the pressure vessel design information (e.g., U1/U1A Forms) for the pressure control receiver, pilot receiver, transfer tank, low and high temperature accumulators, intercooler vessel, and heat exchangers
6. Ammonia refrigeration system P&IDs from Stahlman 2005 upgrade project
7. M&M Process Control Sequence of Operations Document
8. Ammonia refrigeration system relief valve header sizing calculations
9. ARC Maintenance Books – Preventative Maintenance Agreement (January 1, 2015 – December 31, 2015) and any other ARC Maintenance agreements and binders associated with the ongoing maintenance of Stavis Seafoods from 2013 to present
10. M&M Control System Printout identifying the time the E-Stop button was triggered.
11. M&M Control System Reports for the following:
 - a. Temperature and pressure history from January 2016 to present
 - b. Alarm history from January 2016 to present
 - c. Ammonia detector output history from September 2015 to present for all detectors

VI. FACILITY COMPLIANCE STATUS

Table 1 presents a summary of the areas of concern identified by the EPA inspection team with respect to the CAA Section 112(r) and EPCRA based on the on-site compliance inspection at Stavis facility on April 6, 2016.

Table 1. Stavis Seafoods CAA § 112(r)/EPCRA Compliance Inspection Areas of Concern

Area of Concern	Applicable Historical RAGAGEP	Applicable Current RAGAGEP
The floor drains and tidal sump in the Maintenance Room appear to drain directly to the Boston Harbor with no engineering or administrative controls to prevent oils or other hazardous substances from reaching navigable waters.	<ul style="list-style-type: none"> • ANSI/IIAR 2-1999, Section 6.3.1.9 • ANSI/ASHRAE 15-2001(Add. A), Section 11.3 	<ul style="list-style-type: none"> • ANSI/IIAR 2-2014, Section 6.9.2 and 6.9.3 • ANSI/ASHRAE 15-2013, Section 11.3

Table 1. Stavis Seafoods CAA § 112(r)/EPCRA Compliance Inspection Areas of Concern

Area of Concern	Applicable Historical RAGAGEP	Applicable Current RAGAGEP
<p>With the exception of the ammonia refrigeration Ammonia Machinery Room, none of the areas containing ammonia piping and equipment contained an audio/visual alarm outside or inside the rooms to warn personnel of the hazard in the event of an ammonia release. The primary entrance to the Ammonia Machinery Room contained a visual alarm light, but no audio alarm and the alarm was not labeled adequately to identify the purpose of the alarm.</p>	<ul style="list-style-type: none"> • NFPA 1-2003, Section 53.11.2 • ANSI/ASHRAE 15-2001(Add. A), Section 8.11.2.1 	<ul style="list-style-type: none"> • NFPA 1-2012, Section 53.2.3.1 • ANSI/IIAR 2-2014, Sections 6.13.1.3 and 7.2.3 • ANSI/ASHRAE 15-2013, Section 8.11.2.1
<p>The second-floor doors open directly to the exterior of the building without a stairway, ladder, or other means to safely exit the building. The doors on the south side contain two sets of chains across the doorway, but would not effectively prevent an individual from exiting the doorway and falling. The doors are not locked and do not contain warning signs. The doors on the first floor (maintenance room) and second floor were not tight fitting. The doors on the second floor in the Ammonia Machinery Room opened inward and are not self-closing.</p>	<ul style="list-style-type: none"> • ANSI/IIAR 2-1999, Section 6.3.1.5 • ANSI/ASHRAE 15-2001(Add. A), Section 8.11.2, 8.11.8, 8.12(b), 8.12(d), and 11.2.4 	<ul style="list-style-type: none"> • ANSI/IIAR 2-2014, Sections 6.10 and 6.15.3 • ANSI/ASHRAE 15-2013, Sections 8.11.2, 8.11.8, 8.12(b), 8.12(d), and 11.2.4
<p>The inspectors observed several instances of open electrical junction boxes, loose wiring, and light sockets without bulbs in the Maintenance Room and in the Ammonia Machinery Room.</p>	<ul style="list-style-type: none"> • NFPA 70(NEC)-2002, Section 110-27 	<ul style="list-style-type: none"> • NFPA 70 (NEC)-2011, Section 110-27 • IIAR Bulletin 109, Section 7 Inspection Checklists • 29 CFR 1910.303(g)(2)

Table 1. Stavis Seafoods CAA § 112(r)/EPCRA Compliance Inspection Areas of Concern

Area of Concern	Applicable Historical RAGAGEP	Applicable Current RAGAGEP
		<ul style="list-style-type: none"> • ANSI/IIAR 2-2008 Addendum B, 2012. Ed. Section 13.1.7
<p>The Maintenance Room contains an eyewash station inside the ground-floor entrance to the building and at the base of the stairway. The eyewash station is not connected to a water supply and no safety shower is present. In addition, there are no safety showers or eyewash stations in the Ammonia Machinery Room on the second floor or outside the primary entrance.</p>	<ul style="list-style-type: none"> • ANSI/IIAR 2-1999, Section 6.3.1.4 • IIAR Bulletin 109, Section 4.10.10 	<ul style="list-style-type: none"> • ANSI/IIAR 2-2014, Section 6.7 • IIAR Bulletin 109, Section 4.10.10
<p>The inspectors observed a significant amount of piping and equipment in the Ammonia Machinery Room, roof, and other ammonia-containing areas that was inadequately labeled or missing labeling indicating contents, physical state, and direction of flow.</p>	<ul style="list-style-type: none"> • ANSI/IIAR 2-1999, Section 7.1.4 • ANSI/ASHRAE 15-2001(Add. A), Section 11.2.2 • IIAR Bulletin 109, Section 4.7.6 • IIAR Bulletin 114 	<ul style="list-style-type: none"> • ANSI/IIAR 2-2014, Section 5.14.5 • ANSI/ASHRAE 15-2013, Section 11.2.2 • IIAR Bulletin 109, Section 4.7.6 • IIAR Bulletin 114 • ASME 13.1 (2007)
<p>The inspectors observed several sections of piping that penetrated the Ammonia Machinery Room wall and were not tight sealing and other unsealed gaps in the walls and floor.</p>	<ul style="list-style-type: none"> • ANSI/IIAR 2-1999, Section 6.3.1.10 • ANSI/ASHRAE 15-2001(Add. A), Sections 8.11.7 and 8.12(f) • ANSI/ASHRAE 2-2008 (Add. B) Sections 13.1.1.3, 13.1.5.2 	<ul style="list-style-type: none"> • ANSI/IIAR 2-2014, Section 6.6.2 and 6.2.5 • ANSI/ASHRAE 15-2013, Sections 8.11.2, 8.11.7 and 8.12(f)

Table 1. Stavis Seafoods CAA § 112(r)/EPCRA Compliance Inspection Areas of Concern

Area of Concern	Applicable Historical RAGAGEP	Applicable Current RAGAGEP
<p>The Ammonia Machinery Room intake is a square mechanically louvered opening on the south side of the room near the pressure control receiver and the transfer tank. The motor for the louvers was hanging loosely on the louver rod and would not function to open the louvers if activated. Louvers closed when power was off.</p>	<ul style="list-style-type: none"> • ANSI/IIAR 2-1999, Section 6.2.3.7 • ANSI/ASHRAE 15-2001(Add. A), Section 8.11.4 	<ul style="list-style-type: none"> • ANSI/IIAR 2-2014, Section 6.14.5 And 6.14.5.6 • ANSI/ASHRAE 15-2013, Section 8.11.4
<p>The inspectors did not observe a “U” or “UM” stamp signifying compliance with the rules of Section VIII of the ASME Boiler and Pressure Vessel Code (BPVC) on any of the four original compressor oil separator pots, which are pressurized vessels greater than six inches in diameter. In addition, the transfer (dump) tank was missing the nameplate and the facility was unable to provide documentation showing that the tank was designed and fabricated in adherence to Section VIII of the ASME BPVC. None of the oil separator pressure vessels are protected by a pressure-relief device to safely relieve pressure due to fire or abnormal conditions.</p>	<ul style="list-style-type: none"> • ANSI/IIAR 2-1999, Sections 5.10.1.2, 5.10.3, and 5.14 • ANSI/ASHRAE 15-2001(Add. A), Sections 9.3.2 and 9.4 • IIAR Bulletin 109, Section 4.3.1.2 	<ul style="list-style-type: none"> • ANSI/IIAR 2-2014, Section 12.2.2, 12.4.1, 15.2.1, and 15.14.4 • ANSI/ASHRAE 15-2013, Sections 9.3.2 and 9.4 • IIAR Bulletin 109, Section 4.3.1.2

Table 1. Stavis Seafoods CAA § 112(r)/EPCRA Compliance Inspection Areas of Concern

Area of Concern	Applicable Historical RAGAGEP	Applicable Current RAGAGEP
<p>The inspectors observed damaged, stained, and missing insulation in multiple areas on ammonia piping and vessels in the Ammonia Machinery Room, roof, and other areas containing ammonia piping. In addition, the inspectors observed a section of ammonia piping wrapped in Armaflex® insulation on the loading dock. This type of insulation retains moisture and liquid between the insulation and piping, increasing the likelihood of corrosion.</p>	<ul style="list-style-type: none"> • ANSI/IIAR 2-1999, Section 7.2 • IIAR Bulletin 110, Sections 6.7.2 and 6.4.3 	<ul style="list-style-type: none"> • ANSI/IIAR 2-2014, Section 5.10.1 • IIAR Bulletin 110, Sections 6.7.2 and 6.4.3
<p>None of the isolation valves (e.g., king valves) used for isolating the ammonia in the receivers were clearly labeled and identified as isolation valves. In addition, one isolation valve (manual and automated) between the pilot receiver and temperature control receiver was located approximately eight to ten feet above ground level with no permanent platform or ladder or chain for operation to access the valve in the case of an emergency.</p>	<ul style="list-style-type: none"> • ANSI/IIAR 2-1999, Section 6.1.1.3 • ANSI/ASHRAE 15-2001(Add. A), Sections 9.12.6 and 11.2.2(a) • NFPA 1-2003, Section 53.14.2 • IIAR Bulletin 109, Sections 4.10.3 and Section 7 Inspection Checklists 	<ul style="list-style-type: none"> • ANSI/IIAR 2-2014, Sections 5.14.3 and 6.3.3.2 • ANSI/ASHRAE 15-2013, Sections 9.12.6 and 11.2.2.a. • NFPA 1-2012, Section 53.2.4.2 • IIAR Bulletin 109, Sections 4.10.3 and Section 7 Inspection Checklists
<p>The pilot receiver drain valve was not a self-closing style valve. In addition, multiple drain lines extended from the tanks into walkways and were not protected from physical damage</p>	<ul style="list-style-type: none"> • ANSI/IIAR 2-1999, Section 7.1.2 • ANSI/ASHRAE 15-2001(Add. A), Section 11.1 • IIAR Bulletin 109, Section 7 Inspection Checklists 	<ul style="list-style-type: none"> • ANSI/IIAR 2-2014, Sections 5.9.3, 5/17.1, 13.4.2, and 7.2.4 • ANSI/ASHRAE 15-2013, Section 11.1 • IIAR Bulletin 109, Section 7 Inspection Checklists

Table 1. Stavis Seafoods CAA § 112(r)/EPCRA Compliance Inspection Areas of Concern

Area of Concern	Applicable Historical RAGAGEP	Applicable Current RAGAGEP
The electrical switchgear room inside of the expansion Ammonia Machinery Room contained electrical conduit that was dripping water from a fitting, indicating that water was present inside the conduit and presenting an electrical hazard.		
The inspection team requested relief vent calculations to verify that the vent header is appropriately sized and, as of the date of this report submission, have not received the calculations.	<ul style="list-style-type: none"> • ANSI/IIAR 2-1999, Sections 7.3.6 and 7.3.7 • ANSI/ASHRAE 15-2001(Add. A), Sections 9.7.5, 9.7.6, 9.7.7 	<ul style="list-style-type: none"> • ANSI/IIAR 2-2014, Sections 15.3.7 and 15.5 • ANSI/ASHRAE 15-2013, Sections 9.7.5, 9.7.6, 9.7.7
The inspectors observed Hansen ammonia detectors in the Ammonia Machinery Room, the cooler rooms, the freezer room, and the loading dock area near the ceiling. According the ARC representatives and documentation, the detectors had not been calibrated since January 2015 and no record of bump tests since then was provided. The Hansen Bulletin A100 (February 2008) indicates that bump tests should be completed at least once every six months and calibration of the sensors should be completed annually at a minimum.	<ul style="list-style-type: none"> • ANSI/IIAR 2-1999, Section 6.2.2 • ANSI/ASHRAE 15-2001(Add. A), Section 11.6.3 • NFPA 1-2003, Sections 53.11.5, 53.15.2, 53.15.3, and 53.15.5 • IIAR Bulletin 110, Section 10.6.6.4 	<ul style="list-style-type: none"> • ANSI/IIAR 2-2014, Section 17.3 • ANSI/ASHRAE 15-2013, Section 11.6.3 • NFPA 1-2012, Sections 52.2.3.1.7, 53.3.2.2, 53.3.2.3, and 53.3.2.4 • IIAR Bulletin 110, Section 10.6.6.4

Table 1. Stavis Seafoods CAA § 112(r)/EPCRA Compliance Inspection Areas of Concern

Area of Concern	Applicable Historical RAGAGEP	Applicable Current RAGAGEP
<p>The machinery did not contain a legible, permanent sign securely attached and easily accessible in any location on the ammonia refrigeration system displaying the following information:</p> <p>a) Name and address of the installer</p> <p>b) The refrigerant number and the amount of refrigerant in the system</p> <p>c) The field test pressure(s) applied</p>	<ul style="list-style-type: none"> • NFPA 1-2003, Section 53.14.1 • ANSI/ASHRAE 15-2001(Add. A), Section 11.2.1 • IIAR Bulletin 109, Sections 4.10.4 and 7 - Inspection Checklists 	<ul style="list-style-type: none"> • NFPA 1-2012, Section 53.2.4.1 • ANSI/IIAR 2-2014, Section 5.15 • ANSI/ASHRAE 15-2013, Section 11.2.1 • IIAR Bulletin 109, Sections 4.10.4 and 7 - Inspection Checklists
<p>The roof did not contain guardrails or any other method of fall protection to protect workers within six feet of the roof edge.</p>	<ul style="list-style-type: none"> • 29 CFR 1910.501(b)(1) 	<ul style="list-style-type: none"> • 29 CFR 1910.501(b)(1)
<p>The inspectors observed several instances of rusted valves and piping around uninsulated valve manifolds.</p>	<ul style="list-style-type: none"> • NFPA 1-2003, Section 53.5.3 • IIAR Bulletin 109, Sections 4.7.4 and 4.7.5 • IIAR Bulletin 110, Section 6.7. • IMC 2009 Section 1101.17 	<ul style="list-style-type: none"> • NFPA 1 (2012), Section 53.3.1.1 • IMC 2012, Section 1101.7 (where applicable) • ANSI/IIAR 2-2014, Section 13.4.2 • IIAR Bulletin 109, Sections 4.7.4 and 4.7.5 • IIAR Bulletin 110, Section 6.7

Table 1. Stavis Seafoods CAA § 112(r)/EPCRA Compliance Inspection Areas of Concern

Area of Concern	Applicable Historical RAGAGEP	Applicable Current RAGAGEP
<p>The Ammonia Machinery Room pressure relief vent line is located on the lower roof level (i.e., on the same level as the Ammonia Machinery Room exhaust fans), is less than 7.25 feet above the Cooler Room B roof level.</p> <p>The Emergency Exhaust Fan was less than 20 feet from the property line.</p>	<ul style="list-style-type: none"> • NFPA 1-2003, Section 53.8.3.2 • ANSI/IIAR 2-1999, Section 7.3.2 • ANSI/ASHRAE 15-2001(Add. A), Section 9.7.8 	<ul style="list-style-type: none"> • NFPA 1-2012, Sections 53.2.2.1.2(2), 53.2.3.3.12 • ANSI/IIAR 2-2014, Sections 15.5.1.3 and 6.14.3.4 • ANSI/ASHRAE 15-2013, Section 9.7.8 • IMC 2012, Section 1105.7 (where applicable)
<p>The Fish Cutting Room is in an enclosed space within Cooler Room A but does not contain an ammonia detector. Because the room is enclosed, the ammonia detector in Cooler Room A near the ceiling in the center of the room would not provide adequate warning of an ammonia release and presents a hazard to employees working in the cutting room.</p>		<ul style="list-style-type: none"> • ANSI/IIAR 2-2014, Section 7.2.3
<p>The copper water piping around the ammonia feed line to the evaporator in the Fish Cutting Room was oxidized with a bluish-green patina indicating that ammonia had been leaking from the refrigeration valves or piping at some point in the past.</p>	<ul style="list-style-type: none"> • IIAR Bulletin 109, Section 4.10.8 	<ul style="list-style-type: none"> • IIAR Bulletin 109, Section 4.10.8

Table 1. Stavis Seafoods CAA § 112(r)/EPCRA Compliance Inspection Areas of Concern

Area of Concern	Applicable Historical RAGAGEP	Applicable Current RAGAGEP
The inspectors observed pallet racks installed near the ceiling and directly underneath ammonia piping and evaporator units in Cooler Room A. The inspectors observed a damaged drainage pan under one of the Cooler Room A evaporators, indicating that a forklift or other equipment had run into the pan. The inspectors also observed a low unprotected liquid trap on ammonia piping running above one of the loading dock bays. Based on the position of the pallet racks, damage to the evaporator, and position of the loading dock piping, the facility has not adequately protected the ammonia system from damage.	<ul style="list-style-type: none"> • ANSI/ASHRAE 15-2001(Add. A), Section 11.1 • IIAR Bulletin 109, Section 7 Inspection Checklists 	<ul style="list-style-type: none"> • ANSI/IIAR 2-2014, Sections 5.17.1 and 7.2.4 • ANSI/ASHRAE 15-2013, Section 11.1 • IIAR Bulletin 109, Section 7 Inspection Checklists
The temporary refrigeration piping and electrical cords running across the floor in the loading dock area present a trip hazard for employees working in the area.		
The loading dock area contains multiple evaporator units and ammonia piping. The room also contains two natural gas-fired heaters at either end of the room. According to facility representatives, neither heater is interlocked with the ammonia detection system. The heaters present an ignition source in the event of an ammonia release.	<ul style="list-style-type: none"> • ANSI/IIAR 2-1999, Section 6.1.1.5 	
One of the support legs on an icemaker in Cooler Room B was not bolted to the floor.	<ul style="list-style-type: none"> • IIAR 2-2008 (Add B, 2012, ed). Section 14.4.1` 	<ul style="list-style-type: none"> • IIAR 2-2008 (Add. B, 2012, ed) Section 14.4.1
The exit doorway to the exterior of the building in the battery charging room was blocked by two electric forklifts.		

Table 1. Stavis Seafoods CAA § 112(r)/EPCRA Compliance Inspection Areas of Concern

Area of Concern	Applicable Historical RAGAGEP	Applicable Current RAGAGEP
<p>The facility contained only one windsock on the southwest corner of the building above the administrative offices (see Photograph 31). That part of the building contains a lower roofline than many of the other parts of the building such as the Ammonia Machinery Room and warehouse areas. There were no windsocks located near the Ammonia Machinery Room entrance or near the loading dock area where personnel may enter the area. Lack of windsocks presents a hazard to Stavis employees, truck drivers, and emergency personnel in the event of a chemical release at the facility.</p>	<ul style="list-style-type: none"> • 29 CFR 1910.119 Appendix C 	<ul style="list-style-type: none"> • 29 CFR 1910.119 Appendix C • ANSI/IIAR 2-2014, Section 5.14.6
<p>The inspectors observed a total of 13 electric forklifts in the loading dock and battery charging areas. Based on an inventory of battery weights listed on each unit, the EPA estimated the aggregated battery weight of 30,960 lbs. This equates to 6,192 lbs of sulfuric acid assuming a concentration of 20 weight percent and 17,028 lbs of lead assuming a concentration of 55 weight percent. Sulfuric acid is an EPCRA extremely hazardous substance (EHS) with a threshold planning quantity of 1,000 lbs. Lead is a hazardous substance with a threshold planning quantity of 10,000 lbs. The facility did not report sulfuric acid or lead on their EPCRA Section 312 Tier II reports for Reporting Years 2013, 2014, and 2015.</p>	<ul style="list-style-type: none"> • 40 CFR 370.10 	<ul style="list-style-type: none"> • 40 CFR 370.10

Table 1. Stavis Seafoods CAA § 112(r)/EPCRA Compliance Inspection Areas of Concern

Area of Concern	Applicable Historical RAGAGEP	Applicable Current RAGAGEP
<p>The inspectors observed one chemical tote inside the building on the loading dock reportedly containing a 49-percent ethylene glycol mixture that did not contain any labels or hazard identification.</p> <p>Also, the facility did not identify the glycol type (i.e., ethylene or propylene) or amount of glycol solution in the facility's permanent glycol system used for under-floor temperature control.</p>	<ul style="list-style-type: none"> • 40 CFR 370.10 	<ul style="list-style-type: none"> • 29 CFR 1200(b)(4)(i) • 40 CFR 370.10

VII. ENFORCEMENT HISTORY

The facility has no reported violations in ECHO.

VIII. ENVIRONMENTAL JUSTICE

The national EJSCREEN mapping tool indicates that the Facility is located in area of Environmental Justice interest.

IX. AMMONIA EXPERT OPINION

After review of the EPA's inspection report for the March 24, 2016 inspection, I (Larry Aleksandrich) concur with the areas of concern identified by the EPA inspection team in that report based my personal observations of the facility during the April 6, 2016 inspection and discussions with Inspector Wallace.
Sincerely, Larry Aleksandrich